OPERATING SUMMARY

WOOLWICH TWP.

ST. JACOBS

WATER POLLUTION CONTROL PLANT
and WATER TREATMENT PLANT

1974

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WOOLWICH TWP.

ST. JACOBS

WATER POLLUTION CONTROL PLANT
and
WATER TREATMENT PLANT

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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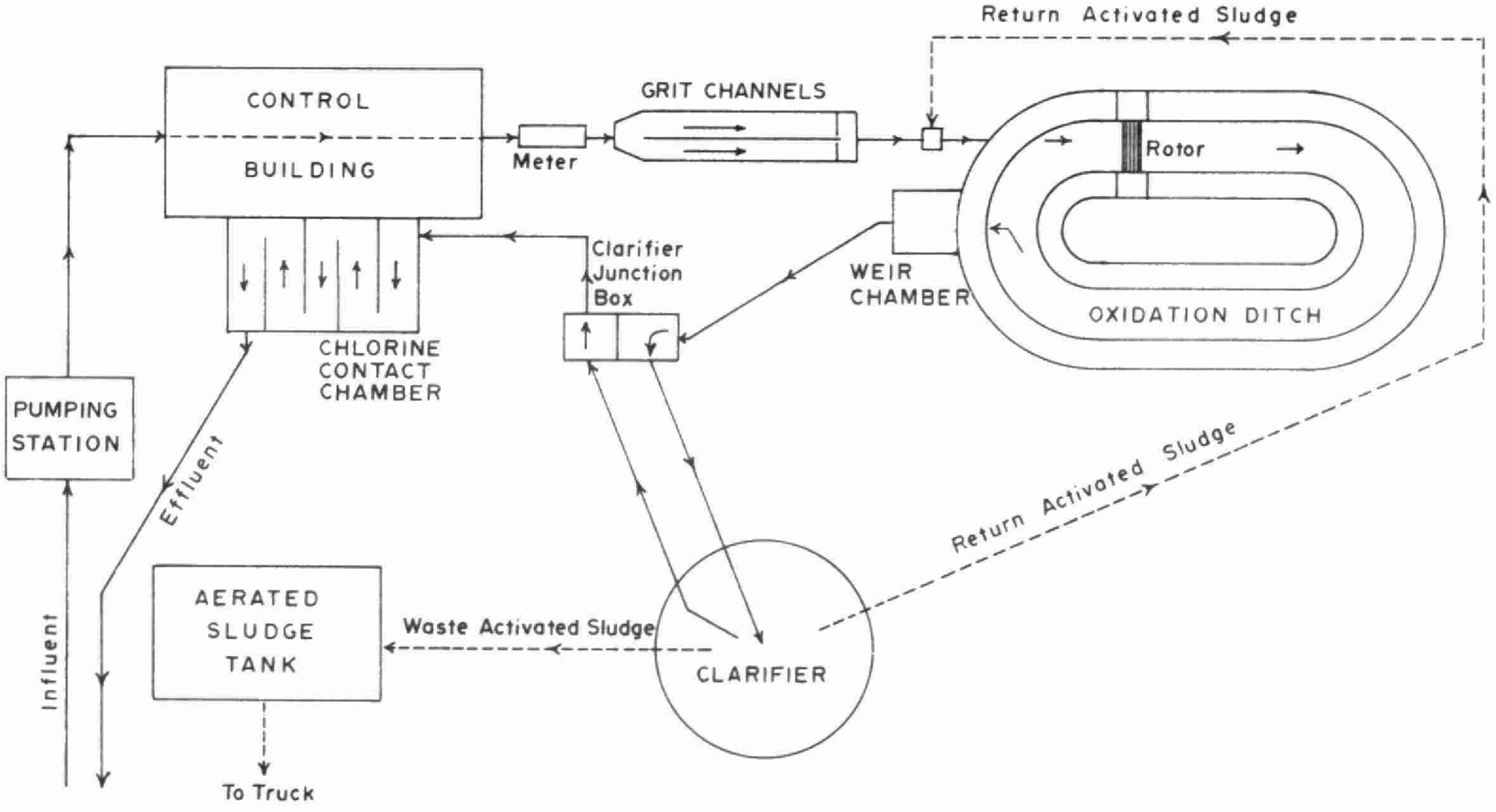
WATER POLLUTION CONTROL PLANT

TOWNSHIP OF WOOLWICH

ST. JACOB'S WPCP



DESIGN DATA

Project	Woolwich Twp. (St. Jacobs) WPCP
Project No:	1-0063-67
Treatment:	Extended Aeration
Design Flow:	0.21 MGD

RAW SEWAGE PUMPING:

Two, Type: FLYGT CP-3150
Size: 600 USGPM at 24' TDH

GRIT CHANNELS:

Two, 19' x 1.6' x 2.2'
Volume (each) 420 I. Gal.
Detention: (each) 2.8 min.

OXIDATION DITCH:

Volume: 200,000 I. Gal.
WL Dept. 5' Detention: 22.8 hours

Rotor - Type: Pumps and Softners
Size: 15' length

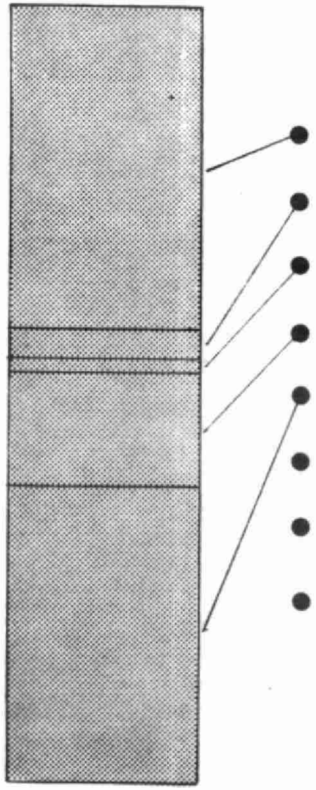
CLARIFIER:

24' dia. x 9.5' swd
Volume: 27,000 I. Gal.
Detention: 3.1 hours
Mechanism: DORR OLIVER LONG
Overflow Rate: 465 gpd/sq. ft.

CHLORINE CONTACT CHAMBER:

5 passes, each 12.3' x 2.5' x 5' awl
Volume: 4,800 I. Gal.
Detention: 33 min.

ANNUAL COSTS



1974 OPERATING COSTS

	%
● SALARIES & WAGES	40
● EMPLOYEE BENEFITS	4
● TRANSPORTATION & COMMUNICATIONS	2
● SERVICES	15
● SUPPLIES & EQUIPMENT	39
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	
● TRANSFER PAYMENTS	
● OTHER TRANSACTIONS	

YEARLY OPERATING COSTS

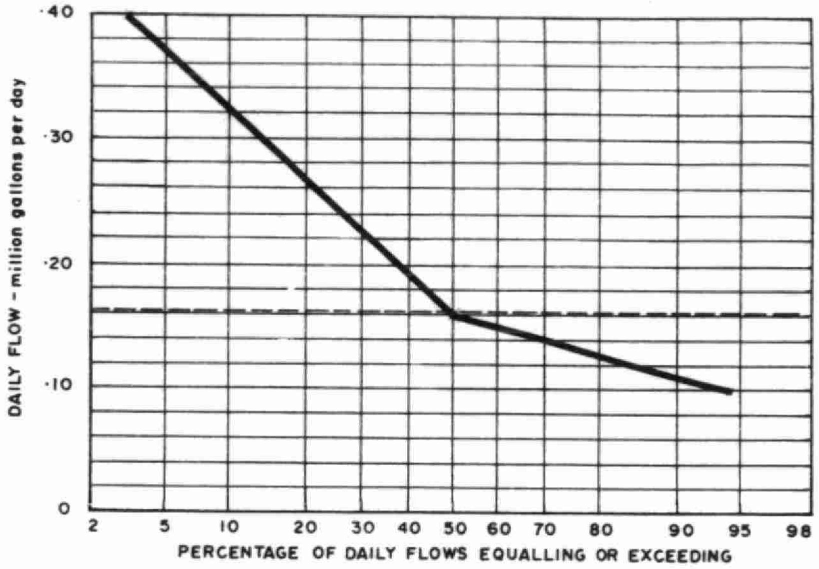
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			$/M.G.	¢/lb BOD
1974	63.2	43852	694	31

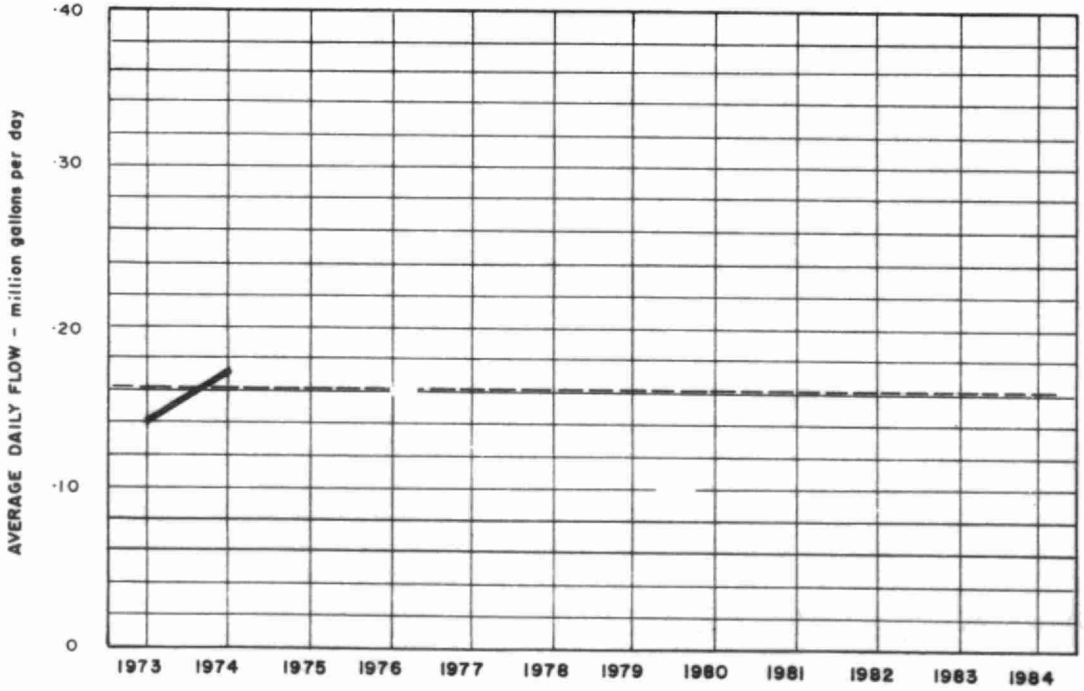
OPERATING EXPENDITURES

Regular Staff	$ 16,106	$
Casual (Unclassified) Staff	1,351	
TOTAL SALARIES AND WAGES		17,457
TOTAL EMPLOYEE BENEFITS		1,678
TOTAL TRANSPORTATION AND COMMUNICATIONS		1,046
Insurance	269	
Sludge Haulage	2,286	
Repairs and Maintenance	3,667	
Other Services	449	
TOTAL SERVICES		6,671
Machinery and Equipment	5,576	
Chemicals	971	
Utilities	4,677	
Other Supplies and Equipment	5,776	
TOTAL SUPPLIES AND EQUIPMENT		17,000
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		-
TOTAL TRANSFER PAYMENTS		-
OTHER TRANSACTIONS		-
GRAND TOTAL	GRAND TOTAL	$ 43,852

PROCESS DATA

FLOWS



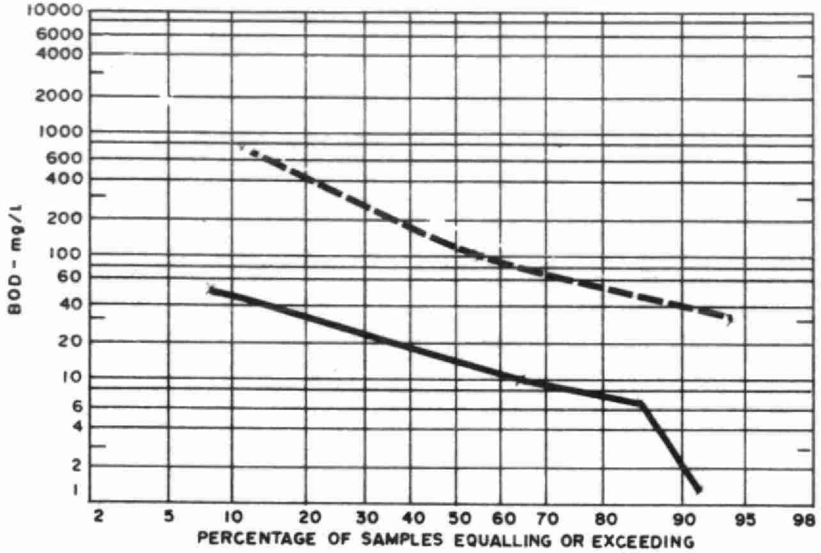


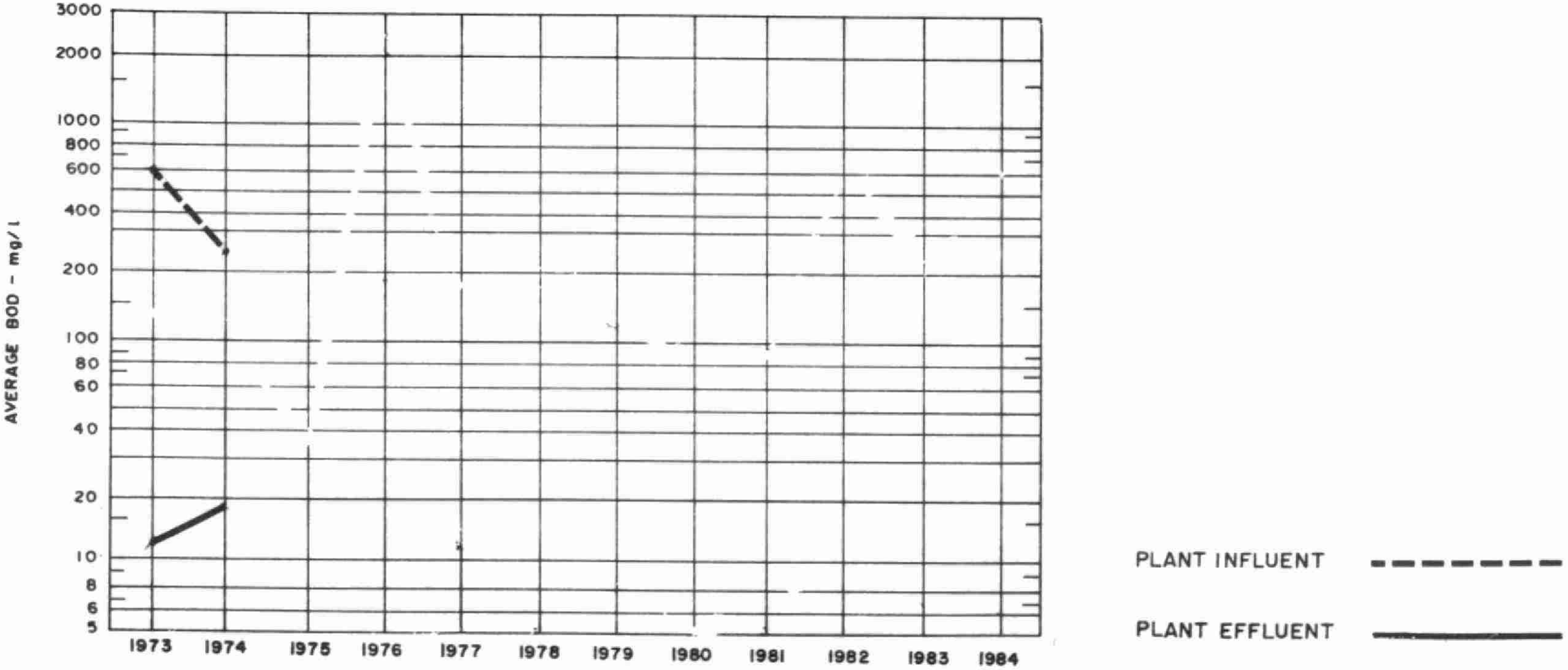
DESIGN CAPACITY – – – – – – – –

PLANT PERFORMANCE

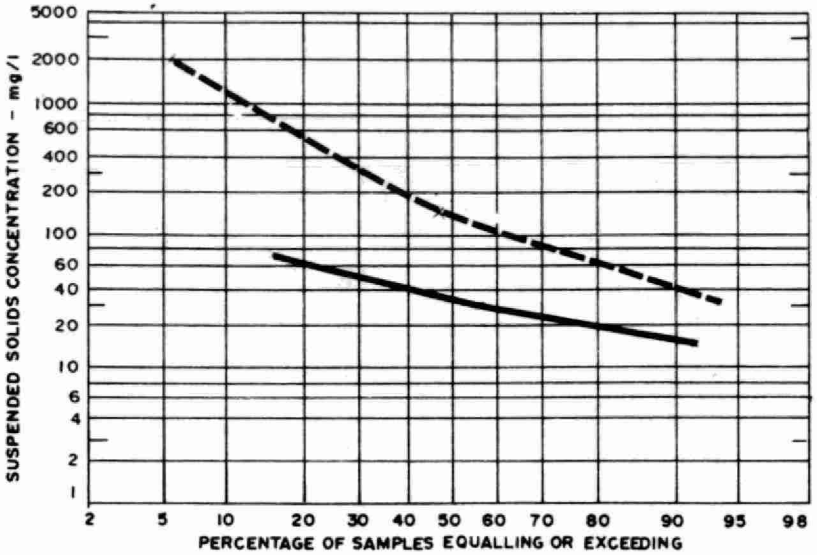
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION %	REDUCTION 10^3 pounds	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION %	REDUCTION 10^3 pounds	INFLUENT mg/l P	EFFLUENT mg/l P
JAN	5.60	.18	.44	321	15	95	17.1	809	60	93	41.9	5.9	1.6
FEB	5.19	.19	.33	88	11	88	4.0	115	35	70	4.2	6.3	1.0
MAR	7.57	.24	.58	305	13	96	22.2	278	25	91	19.2	5.8	.8
APR	7.27	.24	.43	360	42	88	23.0	1800	40	98	128.5	5.6	.8
MAY	7.57	.24	.66	38	34	11	3.0	50	52	0	0.0	5.2	3.0
JUNE	5.01	.17	.24	110	2	98	5.4	60	<15	75	2.2	4.0	.7
JULY	4.77	.15	.19									7.0	2.4
AUG	4.69	.15	.22										.9
SEPT	4.29	.14	.18									6.5	.5
OCT	4.67	.15	.19										.2
NOV	3.51	.12	.12										.4
DEC	3.15	.10	.14										
TOTAL	63.29	-	-	-	-	-		-	-	-		-	-
AVG.		.17	MAXIMUM .58	242	18	93	11.8	510	42	92	24.7	5.7	1.1
No. of Samples	-	-	-	16	12	-	-	16	11	-	-	122	287

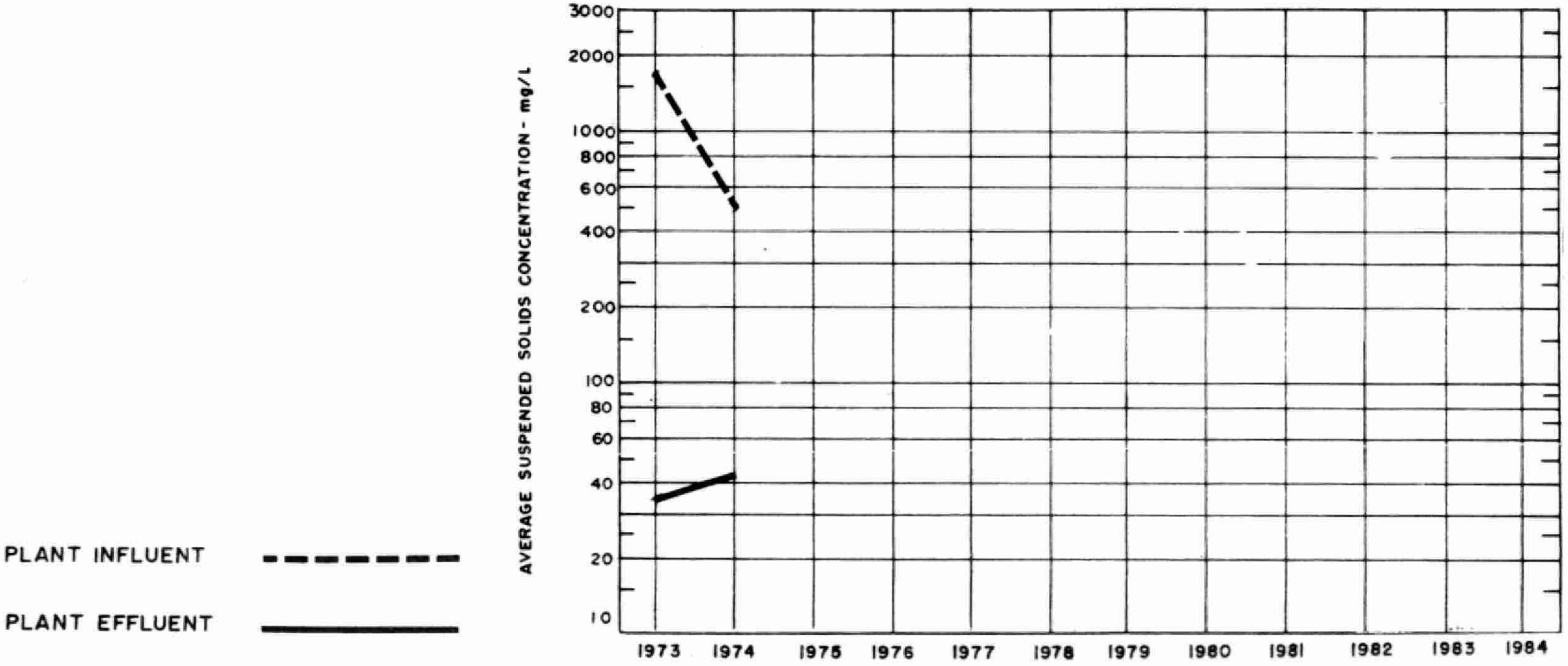
BIOCHEMICAL OXYGEN DEMAND



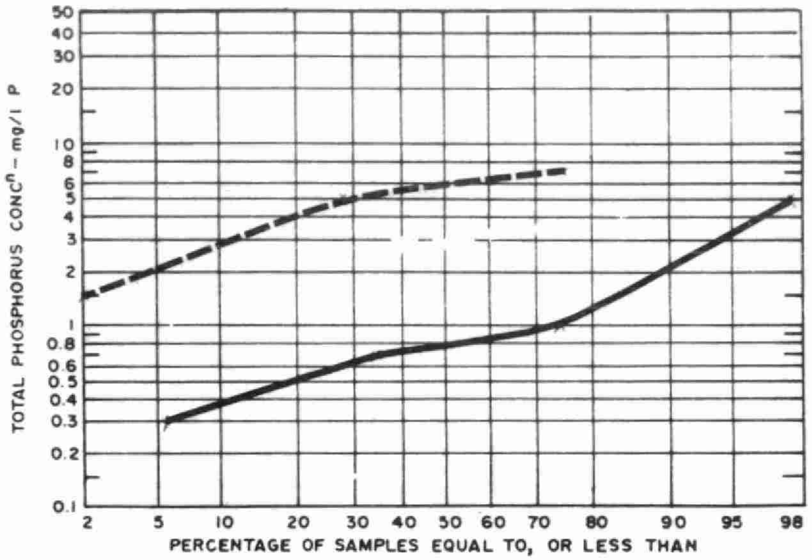


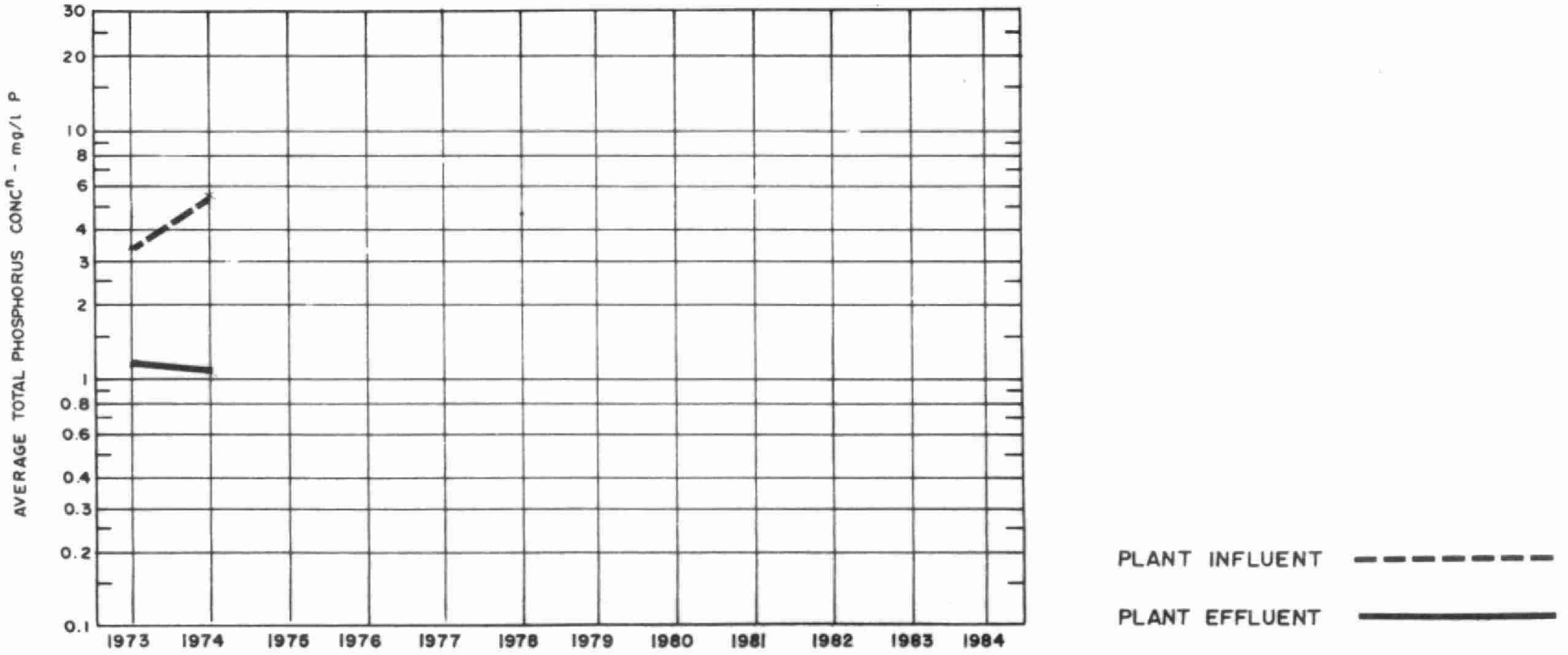
SUSPENDED SOLIDS





PHOSPHORUS

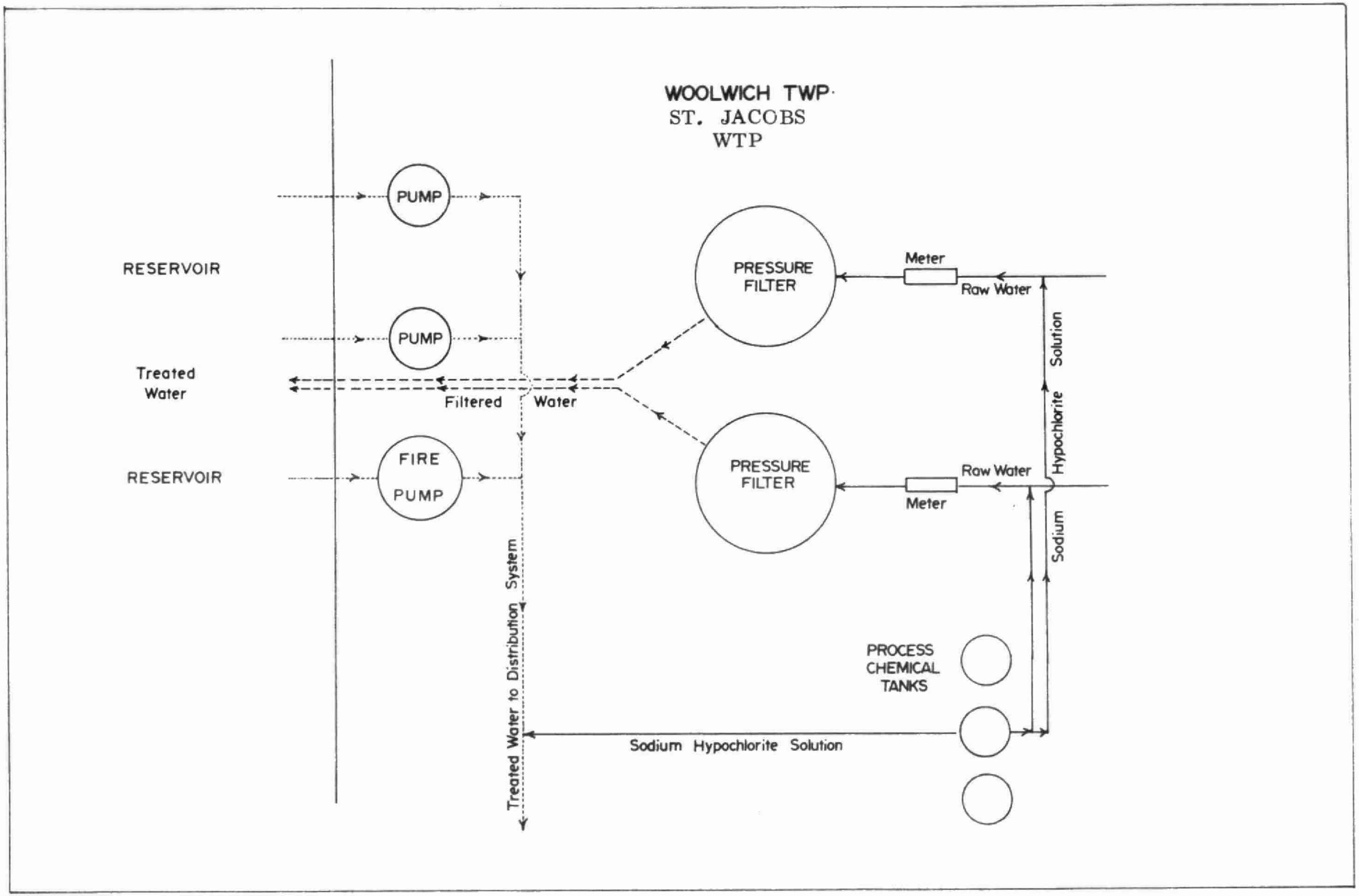

TOTAL PHOSPHORUS CONCⁿ – mg/l P
50
40
30
20
10
8
6
5
4
3
2
1
0.8
0.6
0.5
0.4
0.3
0.2
0.1
2
5
10
20
30
40
50
60
70
80
90
95
98
PERCENTAGE OF SAMPLES EQUAL TO, OR LESS THAN


AVERAGE TOTAL PHOSPHORUS CONCⁿ - mg/l P
30
20
10
8
6
4
3
2
1
0.8
0.6
0.4
0.3
0.2
0.1
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
PLANT INFLUENT
PLANT EFFLUENT

TREATMENT DATA

	GRIT	CHLORINATION		AERATION			WASTE SLUDGE			AEROBIC DIGESTER			
MONTH	QUANTITY REMOVED cubic feet	NaOCl USED gallons	AVG. DOSAGE mg/l	MLSS. CONC mg/l	F/M day^{-1}	AIR USED $\frac{1000\ ft}{lb\ BOD}$	QUANTITY 10^3 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	QUANTITY REMOVED 10^3 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	AMOUNT HAULED cubic yards
JAN	75	83	1.8	7800	.04		45.0			27.4			163
FEB	59	69	1.6	7800	.01		8.8			33.2			197
MAR	53	110	1.8	7000	.05					13.0			77
APR	48	113	1.8							23.1			137
MAY	36	136	2.1	6000	.01		12.0						
JUNE	29	111	2.7	5700	.02		13.0			38.6			229
JULY	47	98	2.5							14.8			88
AUG	14	83	2.1							20.2			120
SEPT	17	78	2.2							37.8			224
OCT.	12	93	2.4							35.1			208
NOV	18	88	3.0							71.5			424
DEC	26	66	2.5							24.3			144
TOTAL	434	1128	–	–	–	–	78.8	–	–	339.0	–	–	2011
AVG.	6.8 cu. ft/mil gal	94	2.1	6800	.03		15.8			28.3			168

WATER TREATMENT PLANT


WOOLWICH TWP.
ST. JACOBS
WTP

DESIGN DATA

PROJECT Woolwich Twp (St. Jacobs WTP)
PROJECT NO: 5-0033-67
Treatment: Filtration and Chlorination
Design Flow: 0.165 MGD

Well No 1: Pump: 1, Type: PLEUGER N-65
Size: 60 IGPM at 184' TDH
Well No 2: Pump: 1, Type: PLEUGER N-64
Size: 55 IGPM at 178' TDH

TREATMENT PLANT
Filters: 2, Type: DURO Mod AF 60 Pressure anthracite filter
Loading : 3 GPM/ft^2
Hypochlorination
Prechlorination Pump: 1, Type: PRECISION 12161-11
Size: 38 GPD man.
Postchlorination Pump: 1, Type: PRECISION 12161-41
Size: 38 GPD max.

SERVICE PUMPS 2, Type: CANADA PUMPS 25A
Size: 150 USGPM at 103' TDH (each)

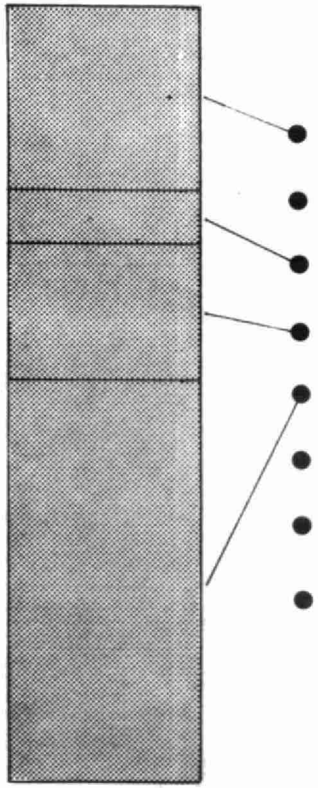
FIRE PUMP 1, Type: CANADA PUMPS 55
Size: 950 USGPM at 155' TDH

RESERVOIR Capacity: 200,000 USG

STANDBY DIESEL 1, Type: DIETZ

ANNUAL COSTS

1974 OPERATING COSTS



● SALARIES & WAGES	22 %
● EMPLOYEE BENEFITS	
● TRANSPORTATION & COMMUNICATIONS	7 %
● SERVICES	18 %
● SUPPLIES & EQUIPMENT	53 %
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	
● TRANSFER PAYMENTS	
● OTHER TRANSACTIONS	

YEARLY OPERATING COSTS

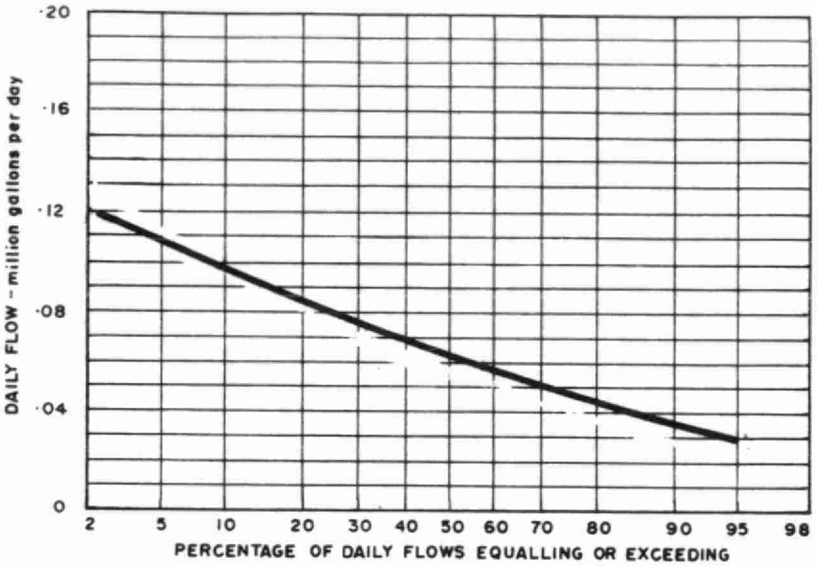
YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS cents / 1000 gal.
1974	25.3	9, 365	37

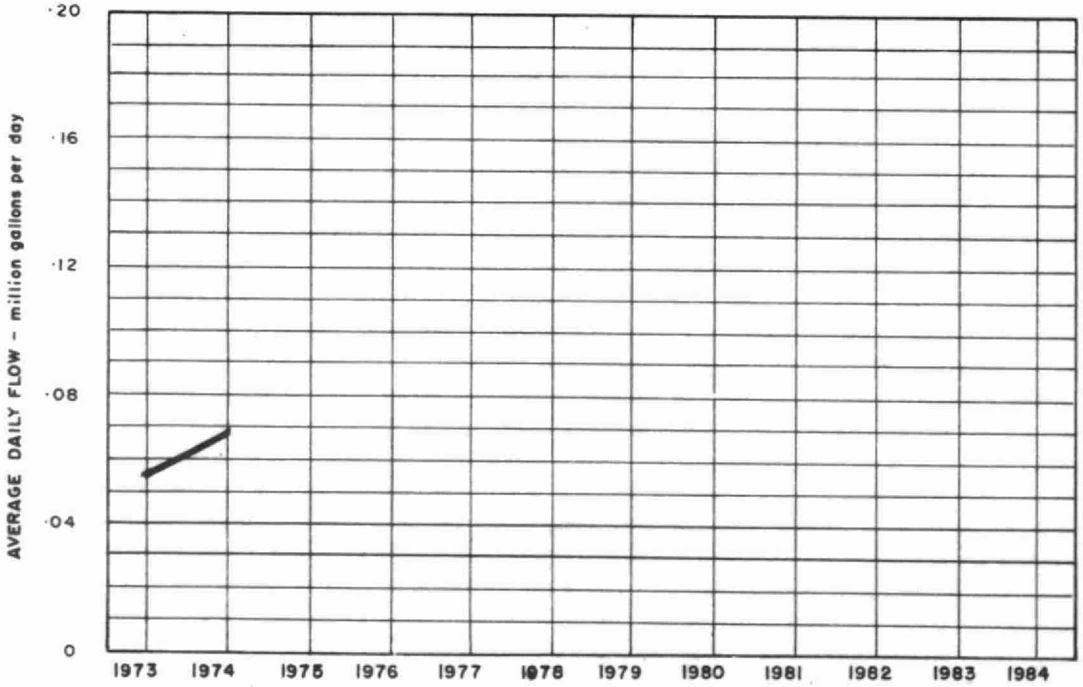
OPERATING EXPENDITURES

Regular Staff	$ 127	$
Casual (Unclassified) Staff	1,966	
TOTAL SALARIES AND WAGES		2,093
TOTAL EMPLOYEE BENEFITS		-
TOTAL TRANSPORTATION AND COMMUNICATIONS		696
Insurance	239	
Sludge Haulage	-	
Repairs and Maintenance	1,372	
Other Services	32	
TOTAL SERVICES		1,643
Machinery and Equipment	2,115	
Chemicals	113	
Utilities	174	
Other Supplies and Equipment	2,531	
TOTAL SUPPLIES AND EQUIPMENT		4,933
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 9,365

PROCESS DATA

FLOWS





DESIGN CAPACITY – – – – – – – –

PLANT PERFORMANCE

	FLOWS			RAW WATER		CHLORINATION		
				TEMPERATURE				
MONTH	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	AVERAGE °F	MAXIMUM °F	TOTAL AMOUNT OF NaOCl used gallons	PRE-DOSAGE mg/l	RESIDUAL IN PLANT EFFLUENT mg/l
JAN	1.90	.060	.101	40	40	17	0.9	0.2
FEB	1.89	.070	.097	40	40	17	0.9	0.2
MAR	2.42	.080	.118			18	0.8	0.2
APR	2.34	.080	.064			18	0.8	0.2
MAY	2.65	.085	.204			20	0.7	0.2
JUNE	2.21	.074	.124			17	0.8	0.2
JULY	2.61	.084	.162			22	0.9	0.2
AUG	2.83	.091	.161			20	0.7	0.2
SEPT	2.22	.074	.113			18	0.8	0.2
OCT	1.38	.045	.081			23	1.6	0.2
NOV	1.42	.047	.085			22	1.6	0.2
DEC	1.39	.045	.116			22	1.6	0.2
TOTAL	25.26					234		
AVG.		.069	.204	40	40	0.6	0.9	0.2

PLANT PERFORMANCE

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		FILTER OPERATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	AVERAGE FILTER RATE gpd/ft^2	AVERAGE FILTER RUN HOURS		BACKWASH WATER USED mil. gal.
	0	1 - 3	4 - 32	33- 320	> 320						Max.	Min.	
JAN	4							8	0	137	8	4	.040
FEB	2							4	0	143	8	5	.050
MAR	4					1	0	6	0	143	8	5	.040
APR	2							3	0	143	9	5	.050
MAY	4							10	0	141	10	5	.060
JUNE	2							3	0	140	8	5	.080
JULY	3	1						10	2	140	10	5	.080
AUG	2							4	0	140	10	7	.130
SEPT	2							6	0	140	9	5	.090
OCT										140	9	5	.090
NOV	2							4	0	140	9	6	.090
DEC										140			.080
TOTAL	27	1				1	0	58	2				.880
AVG.	0									141	9	4	.073

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as $CaCO_3$	34	814	1250	640	6	600	740	5	80 – 100
ALKALINITY in mg/l as $CaCO_3$	34	200	216	187	6	198	200	196	30 – 100
IRON in mg/l Fe	34	2.32	17.20	.40	6	.05	.15	<.05	Less than 0.3
CHLORIDE in mg/l Cl^-	34	3	5	3	6	12	42	3	Less than 250
pH in pH units	34	7.5	8.1	7.2	6	7.6	7.6	7.5	7.0 – 8.5
FLUORIDE in mg/l F^-	26	.7	.9	.4					Less than 1.2
AMMONIA in mg/l as N	2	.42	.60	.24	3	.18	.20	.16	Less than 0.5
CALCIUM in mg/l as Ca	32	228	384	180	3	135	204	2	Less than 1.
NITRITE + NITRATE in mg/l as N	6	<.01	.01	<.01	3	.90	2.60	.04	
MAGNESIUM in mg/l as Mn	22	56	80	43	3	31	46	<1	Less than 10
CONDUCTIVITY in micromhos per cm^3	28	1290	1800	1070	3	1197	1299	1190	
SULFATE in mg/l	32	633	1000	490	3	570	580	560	

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